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DIPHTHERIA.



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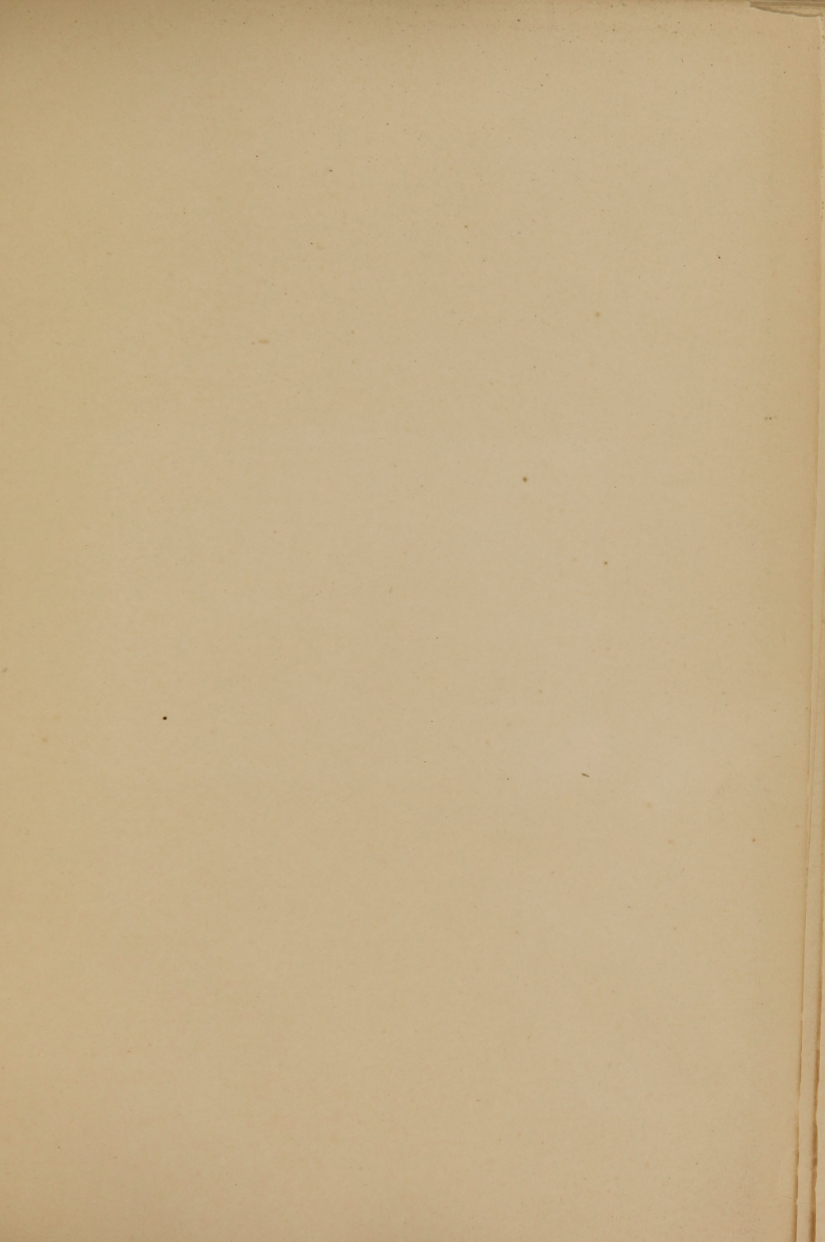
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A MONOGRAPH

ON THE

TREATMENT OF DIPHTHERIA,

BASED UPON

A NEW ETIOLOGY AND PATHOLOGY.

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BY

WILLIAM C. REITER, A.M., M.D.

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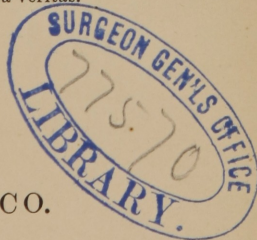
"Amicus Plato, amicus Socrates, sed magis amica veritas."

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## DEDICATION.

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To my confrères in the serious, sad, and arduous profession of practical medicine I dedicate this monograph on diphtheria, that *opprobrium medicorum*, which has caused many a heart-ache to honest toilers in the art of healing.

Its method may surprise some. Niemeyer, whose authority is based on learning and integrity, I have copied entirely, *verbatim et literatim*, because I differ *in toto cælo* from his and all other accepted authorities as to the etiology and treatment of this disease, and am desirous of placing my opinions in juxtaposition with theirs so that the reader may compare and judge.

We have again an epidemic in our city which has already stricken three in one family; and an advanced case, which I saw in consultation on last Thursday (July 18), involving the larynx to aphonia, and with an extensive exudation on tonsils and velum palati, convinces me that the treatment I have pursued for fifteen years will rescue from death all cases where deeply-seated capillaries involving vital tissues or a very large superficial surface have not been fatally clogged.

As to the style and artistic merit of this monograph, I ask the indulgence of my readers. The *cacoethes scribendi* is not inherent in me, but *its antipode*, and if I have been guilty of repetition and many other serious faults, I beg their pardon.

WM. C. REITER.

317 PENN AVENUE, }  
Pittsburgh, Pa. }



# DIPHTHERITIS.

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## ETIOLOGY.

“EPIDEMIC diphtheritis belongs among the infectious diseases, and even among those that are most typically *contagious*. The *miasmatic* origin of the disease is doubtful, at least in our country, where it has only occurred during the past ten years, and has appeared almost exclusively as more or less extensive epidemics which occasionally spread around from one place to another. The contagion is contained in the false membrane and shreds of tissue detached from the fauces, and in the air breathed out by the patient.” . . .\*

My own observations in the epidemics of 1863, '64, and '65, and in that of 1877, compel me respectfully to object to the conclusions of this most learned authority in practical medicine. The predisposing cause, whatever it be, is epidemic, but the disease is neither infectious nor contagious. An epidemic predisposing a people to diphtheria, erysipelas, typhoid fever, or any other disease, only attacks a proportion of the population, and our explanation is, the perfection of the

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\* Niemeyer, Practical Medicine, art. Diphtheria, vol. ii. p. 614, *et seq.*

vital organism resists external mal-influences. Who has not vaccinated a child for the fourth or fifth time before the poison has induced its specific effect? Whatever the predisposing epidemic cause may be, when it reaches a subject and makes its power felt, the metamorphosis of fibrin in the portal system is impaired, and the functional disturbance must be the remote cause of this fearful malady. And the violence of disease is in proportion to the fibrinous excess in the blood. How this happens is hard to tell, and impossible to explain; we live in opposition to, and in spite of, the common forces of matter.

Carlyle says, "Force, Force, everywhere Force; we ourselves a mysterious Force in the centre of that. There is not a leaf rotting on the highway but has Force in it: how else could it rot?"

In my early professional career I practised twenty years in a country town on the western slope of the Allegheny Mountains. One of my most intimate and profitable friends, at that time, was a distiller of whiskey, who had taken a large distillery on the terms of three gallons of whiskey for every fifty-six pounds of meal; the proprietor to supply everything but malt and hops. He made money very rapidly, often attaining five gallons to the fifty-six pounds. This gentleman was a practical chemist: had learned all that Fowne and Liebig could teach him on the beautiful subject of fermentation.

I gained much by inspecting his mash-tubs, with his lucid exposition of the condition of their contents.

His greatest foes were acidity, too rapidly-decaying gluten, and irregular metamorphosis of the mass. He had to watch his yeast with a scientific and practical tact. He said, "Yeast must be pure; if gluten decays too rapidly the yield is minimum."

Alkalies, especially lime, antagonized too great a tendency to acidity; but a week of low barometer with great humidity was his insuperable foe, and he has often foretold its close by the iron hoops rusting, in a night, on his whiskey barrels.

He would exclaim, "Now, doctor, for five gallons; look at the oxidized hoops. Ozone has come back, and I can now have a normal fermentation."

I don't know whether other medical men feel as I do when they have a patient that might get well under favorable circumstances, or whether my distiller friend has given an abnormal kink to my mental procedure, but I know that when I have an invalid recovering from a severe illness, in whom organic mischief appears to have been spared, but the recuperative force seems held down by humidity and a clouded sky, my first sight of the rails of our railways reddened with oxide fills me with a hopeful expectation for recovery, where life has been trembling in the balance, that is rarely disappointed.

The facts on which Niemeyer bases contagion and infection may be explained by affirming that the depressing influence of foul air from a putrefying surface is a potent factor in perfecting or completing an abnormal condition already in existence.

## ANATOMICAL APPEARANCES.

“Just as in other infectious diseases, in diphtheritis also certain organs are chiefly subjected to the disturbances of nutrition, and diphtheritis is constantly localized in the fauces, less constantly in the upper portion of the air-passages, in the kidneys, spleen, and, in some very obscure manner, in the nervous system. The disturbances of nutrition in the above organs do not anatomically correspond. In the pharynx we find the form of diphtheritic inflammation to which the disease owes its name, and which we have often described. The fauces, and especially the tonsils and soft palate, are covered with a grayish-white pseudo-membrane, which is not easily removed, and which leaves an ulcerated loss of substance when it finally breaks down into a discolored fetid mass, and falls off.” (In one case I saw, the whole pituitary membrane of the nostrils became gangrenous, and in case No. III., the fauces became gangrenous, if fetor be an infallible index.)

“The diphtheritic pseudo-membranes, or, to speak more precisely, the diphtheritic sloughs, result from superficial gangrene of the mucous membrane, which again depends on compression of its nutrient vessels by an interstitial fibrinous exudation, or from swelling of the tissue-elements, which are filled with a cloudy substance.” (Why may not a too fibrinous blood obstruct capillary circulation entirely, and thus cause gangrene?)

“If the larynx and trachea participate in the disease, the croupous, not the diphtheritic, form of inflammation of the mucous membrane occurs; that is, the surface of the mucous membrane is covered with a more or less tough and consistent false membrane, which may readily be removed, and leaves no loss of substance after its removal.” (What effect might the large amount of soda eliminated from the salivary and buccal glands have on fibrin in the capillaries?)

“This circumstance has induced some physicians to identify primary genuine croup, which is due to catching cold, etc., with croupous laryngitis caused by infection with diphtheritic contagion. I consider this a false view. The division of diseases according to the pathologico-anatomical changes they induce is only a make-shift. In all cases where, as in genuine and diphtheritic croup, we find that two anatomically similar disturbances of nutrition depend on very different causes, we should consider them as distinct. . . . The parenchymatous degeneration of the kidneys is found in almost half of the cases. The spleen is usually enlarged and soft. The anatomical changes of the nerve-centres, or peripheral nerves, on which diphtheritic paralyses depend, have not yet been discovered. We know as little about the anomalies of the blood in diphtheritis as in other infectious diseases.” (Would not a plugged capillary or capillaries explain paralysis? and do not fibrinous nodes disappear in time? Do fibrinous deposits suppurate, or induce suppuration?)

## SYMPTOMS AND CAUSE.

“The disease almost always begins with apparently insignificant and harmless symptoms. In some cases the general health is disturbed a few days before the disease breaks out; the appetite is less; the patient complains of dulness, depression, and chilliness. More rarely the disease begins with a severe chill, accompanied by nausea and vomiting. At the same time the patient complains of difficulty of swallowing; but in most cases this is no greater than it usually is in simple catarrhal angina. If the fauces be not yet covered with false membrane, but only somewhat reddened and swollen, at this stage we can only suspect or recognize the disease when we know that diphtheritis is epidemic, or that persons about the patient have, or have had, the disease. A very suspicious, and usually a very early, symptom is a hard swelling of the lymphatic glands lying at the bifurcation of the carotid artery, which, as Luschka especially insists on, are directly connected with the lymphatic vessels of the soft palate. Not unfrequently the persons about the patient have their attention first called to the disease by swelling of these glands, the complaints of slight difficulty of swallowing having passed unnoticed. It is far more common for us to find more or less extensive whitish-gray patches in the fauces at our first examination, and then we can have no doubt about the dangerous and malicious foe with which we have to deal. Even in

cases where the disease has begun without a chill, where the fever is slight or entirely absent, where the general health is excellent, so that the patient can hardly be kept in bed, even where the difficulty of swallowing is very insignificant, and where the deposits are slight, are thrown off without putrescence, and leave a scarcely perceptible loss of substance, we are not at all sure that the disease will run a favorable course, that the dangerous accidents, of which we shall hereafter speak, will not occur, and that there will be no paralysis during convalescence. The fact, which I have frequently observed, that albuminuria occurs during the above cases which run their course without fever, shows that the parenchymatous degeneration of the kidneys in diphtheritis is not due to excessive increase of the bodily temperature, but is a direct result of the infection with diphtheritic poison.

“ If the disease has begun violently, if a chill and repeated vomiting have been the first symptoms, the subsequent course of the disease also is usually more severe. It is true the difficulty of swallowing generally remains moderate, and the fever does not become very high, but the patient grows pale, the eyes become dull, the pulse small and usually frequent, rarely retarded; the patients are very sluggish and apathetic. In many cases the putrefaction of the false membrane causes a penetrating, foul breath. If the nasal mucous membrane participate in the disease, a discolored, fetid fluid flows from the red-

dened and eroded nostrils. The swelling of the cervical glands becomes more marked, the enlarged glands are very hard and resistant, but have no tendency to suppurate. In about half the cases, examination of the urine shows the presence of a considerable amount of albumen. Even, after a few days, death may occur from general paralysis, while the intellect remains clear. Some patients, whose state had not excited any anxiety, and whose general condition was previously very satisfactory even, die unexpectedly with the symptoms of general collapse, without our being able to find any explanation for the occurrence. Sometimes also attacks of deep syncope occur, and pass over, till finally a new attack ends in death. Even the last-mentioned severe cases may terminate favorably. Then the false membranes are detached and new ones are formed; the remaining ulcers clean up and cicatrize. At the same time the difficulty of swallowing disappears, the glandular enlargement subsides, the depression of the patient disappears, and, if there be no sequelæ, perfect convalescence follows in two or three weeks; but it is usually a long time before the patients recover entirely.

“The disease, as above described, is greatly modified when the diphtheritic inflammation of the fauces is accompanied by croupous inflammation of the larynx and trachea; for then the above symptoms are complicated with hoarseness, aphonia, excessive dyspnœa, and other symptoms described when speaking of genuine croupous laryngitis. This complication oc-

curs in the mild as well as in the severe cases. Frequently, examinations of the fauces and the epidemic occurrence of diphtheria alone enable us to decide to which form of croupous laryngitis the case belongs. Even such cases may end in recovery; but most of the patients die, some with the symptoms of collapse, some with those of insufficient respiration, and poisoning of the blood with carbonic acid.

“Even when the disease apparently ends in recovery, it is often followed by paralysis. The not unfrequent occurrence of diphtheritic paralyses after very mild cases, as well as the curious fact that they never follow the disease immediately, but come on from two to four weeks after its disappearance, sufficiently explains why the connection between the paralysis and the diphtheritis so long escaped recognition. Paralysis of the soft palate and pharynx is the most frequent form of diphtheritic paralysis, and generally precedes the other forms. When the soft palate is paralyzed the patients have a nasal voice; on attempting to swallow fluids, they enter the nose. If the pharynx be also palsied, the act of swallowing is greatly impaired, and we are sometimes obliged to nourish the patient through a stomach-tube. This paralysis of the muscles near the seat of diphtheritic inflammation is most frequently accompanied by that of the muscles of the eye, by which the power of accommodation is lost, and the patient begins to squint. The extremities also, especially the feet, are occasionally attacked by more or less complete paral-

ysis. In a very small epidemic I saw two cases of total paralysis of all the extremities. The prognosis of diphtheritic paralysis is generally favorable; almost all cases recover sooner or later. The various attempted explanations of these cases are unsatisfactory. We do not even certainly know whether they are of peripheral or central origin. It has been suggested that the paralyzes after diphtheria are analogous to those occasionally observed after other severe diseases, especially after severe typhus. But this suggestion is opposed by the great frequency of diphtheritic paralysis compared to that after other diseases, as well as by the marked disproportion between the intensity of the malady and the consequent paralyzes distinguishing diphtheritic paralyzes from those remaining after other diseases.

#### TREATMENT.

“Prophylaxis requires that the physician should protect himself from contact with the false membrane and shreds of tissue that are coughed up, and that he should warn the attendants on the patient of the danger of this contact. When circumstances permit, those who have nothing to do with the care of the patient should keep out of the sick-room.

“The recommendations of the varied internal and external remedies that are said to have proved efficacious against diphtheritis, have usually originated in the last stages of epidemics, at which time the cases are usually milder and recoveries more frequent,

even without treatment. Almost all physicians experienced in the treatment of diphtheria agree that, in severe attacks, the most prized remedies *are perfectly useless*. In recent cases I deem it advisable to remove the false membrane carefully, and touch the dried bases with nitrate of silver, concentrated muriatic acid, or liquor ferri sesquichlorat., but not to repeat this operation more than once or twice daily, and not to continue it too long. Besides this, as long as the mucous membrane is still very red and swollen, I let the patient swallow small pieces of ice slowly, and prescribe a solution of chlorate of potash (ʒj to ʒvj), with directions to take a tablespoonful in the mouth every two hours, and to keep it in contact with the pharyngeal tissues for some time before swallowing it. I have no personal experience about the local application of chlorine-water, or the solutions of sulphite of soda (ʒj to the ʒj), or of permanganate of potash, which are said not only to remove the fetid odor, but also to arrest the putrefaction. On account of the threatening collapse, we must avoid all debilitating treatment, especially abstraction of blood; on the contrary, we should from the first attend to keeping up the strength of the patient by tonics, quinine, and iron, and by wine and nutritious diet. If collapse occur, we should give analeptics, camphor, musk, and particularly plenty of strong wine. Croupous laryngitis coming on during the disease requires about the same treatment that we advised in the first volume for idiopathic croupous

laryngitis, only I do not employ abstraction of blood or calomel, even in recent cases. Tracheotomy should not be deferred too long, if we hope to have it succeed, which it rarely does.

“Short, cold ablutions, cold douches, and sea-bathing have obtained the most confidence in diphtheritic paralysis. The induced and constant currents have also been advised. I have subjected many cases to long-continued treatment by electricity without benefit. In one case, where the patient was paralyzed in all her extremities, and was treated at my clinic by electricity without benefit for four weeks, she completely recovered, without any treatment, a short time after being dismissed from the hospital.”

I have never seen a case, however slight the disease, that had not a characteristic pulse never found in common angina; always tense, though small, and quick, and not frequent. The frequency of the pulse with exalted temperature may depend on the seat of the diphtheritic inflammation.

In the son (æ. 15) of my professional friend, Dr. James McCann, the fauces were but slightly affected, but he had an annoying and constant cough without expectoration; a temperature of  $104^{\circ}$  and pulse of 140. Auscultation fixed the mischief in the trachea, at and above the bifurcation.

Ten grains of calomel every hour, for four hours, was followed by a pulse of 108 and a temperature of  $101\frac{1}{2}^{\circ}$ , and an entire relief of the annoying cough.

In thirty-six hours a mass was expectorated which had certainly exuded in the trachea. As a rule, the temperature is never much above the normal standard.

I think glandular swellings do not precede destruction of tissue and absorption of foul fluids, but are constantly the result.

I do not believe false membrane ever gives rise to odor; the underlying capillaries are closed with solid fibrin, putrefaction ensues, and you have stench and, *pari passu*, enormously enlarged glands.

Might the glands which so suddenly enlarge in "scarlatina anginosa" about the time the eruption fades be the result of the same cause, and be prevented by the same remedy?

An intense erythematous redness of the fauces with scarcely any tumefaction is a constant symptom. If tonsils, or tonsil, be enlarged early in the disease, it was a previously existing hypertrophy and not diphtheritic. With a tense and quick pulse and this intense redness of fauces, I would pronounce the disease diphtheritis.

The violence of the disease must be in exact proportion to the force of the proximate cause, which is, the abnormal quantity of fibrin in the blood.

In mild forms, with angina resulting from cold and indigestion, we can understand such slowly progressing and yet serious cases as reported in No. V. No. III. implies a fearfully dangerous excess, which may commit fatal ravage before medical aid is summoned.

We can readily conceive a highly fibrinous blood condition occasioning heart-clot, or inducing remora in the ganglionic centres or *nœud vital* itself, and thus account for those sudden deaths of which Niemeyer speaks as "sudden collapse." The highly fibrinous blood will explain the conditions of the spleen and kidneys, and I think the paralysis is readily accounted for on this hypothesis. A few capillaries might become clogged with fibrinous molecules without interfering with the nervous functions, until a restoration of appetite and blood-making forces, causing plethora, would result in effusion and paralysis, which could be overcome by presuming the fibrin to become soluble. This case is in point. I was called to see the wife of a Presbyterian clergyman, about sixteen miles from my home, in consultation with her physicians. On reaching the parsonage, at least three miles from the county seat, in which the medical men resided, I found they had failed to be punctual to their own appointment. I used the time of waiting in learning the history of the case.

The patient had been under medical care for six months; the early symptoms were chiefly dyspeptic, with headache. After a considerable time, her intellect manifested marked disturbance, which old Dr. C. traced back to a family predisposition to insanity.

I do not remember how long Dr. F. had been in attendance before my visit, but some weeks had elapsed, I am sure. Dr. C. was confident the stomach was the only organ impaired. Dr. F. in-

sisted that the brain was implicated, and this conflict led to my visit. After hearing all I could elicit from the nurse and friends, I saw and examined the patient, and had just come back to the parlor when Dr. F. met me and invited me to see the patient. I asked him a few questions, and told him "I had examined the patient, and did not desire to see her again." I said "that a letter from Dr. C. had been given me on my arrival, saying that he could not be present (professionally hindered), and begging me to leave a written opinion."

I desired Dr. F. to get pen, ink, and paper for me, and while he examined his patient I would write my opinion, which he did. "Mrs. S. cannot recover; has softening in left hemisphere of cerebrum, or abscess. If desired to prescribe, I would give mercury, shave head, and cup shoulders, on the hypothesis of hyperæmia, instead of softening or abscess." This woman was full of blood, in spite of her disease. The doctor returned to the parlor, read my opinion, and said, "You and Dr. C. will never agree. He says the nervous manifestations are reflex." This visit was made on Thursday, and on the following Monday night, on reaching home, after a long ride, my wife told me a messenger from the parsonage had waited several hours for my return, and left word I must come that night to see the patient, who was much worse. I said I would not ride sixteen miles that night to see a case which was utterly hopeless, but would start early the next morning. I found

the patient in profound coma, with stertorous respiration, purple face and neck, and the veins turgid. Dr. F. arrived soon after I had seen the patient, and told me "the devil was to pay," as Dr. C. asserted "we had killed the patient with our head-shaving and calomel." As he said this a gentleman came up, who was introduced to me as the brother of the patient. He was a lawyer of distinction; has since been a Congressman and a judge. He very bluntly remarked "that the proverbial fact of doctors differing was a source of great and painful perplexity and annoyance to the relations." "Do you know, sir" (addressing me), "that Dr. Campbell, our oldest and most trusted medical adviser, says your treatment has brought on this fatal issue to my sister's malady?" (I was then twenty-five years younger than I now am.) I replied, "I never recommended any treatment," and demanded my written opinion, which I had intrusted to the family for Dr. C.'s perusal, but to be safely preserved by them. It was brought to him; he read it, and admitted the correctness of my position. I then said, "Now, sir, you owe it to TRUTH, to your own peace of mind, and to me, to have an autopsy in this case." He said he would gladly consent, and would pledge the consent of his parents if the husband could be induced to concur. I told him I would go then and secure his permission. The brother and doctor tried to dissuade me; said it was "indecorous and indelicate," as the patient was still living. I replied, "I must go home; she might live

many hours, and this is my only opportunity." I saw him,—some time was spent in proving the propriety, and I got his consent and approval. One week after my first visit we met for a *post-mortem*. Dr. F. called me aside and inquired "if I was good at controversy." I said, "What do you mean?" He responded, "Dr. C. is a famous religious and political debater, and will talk you out of your diagnosis." I replied I was fresh from the careful perusal of Marshall Hall and Solly, and if the condition of the brain in our autopsy did not paralyze the old doctor's valiant faculty, I would yield the palm and crown cheerfully to the old gentleman. He replied, "You are much more confident than I am." When all things were ready, I said to Dr. C., "You show us what the stomach can reveal; I will examine the brain."

On removing the calvaria, the vessels of the *dura mater* were so enormously distended with blood (their calibre was twice or thrice increased, perhaps more) that I directed attention to them. My controversialist old doctor curtly replied that "in *articulo mortis* the brain as well as other soft organs had an undue supply of blood." I merely suggested to him that it was the *dura mater* we now were seeing, and not the brain. When the hemispheres were exposed, the turgescence was equally surprising. I removed the entire viscus and placed it on a dish. There were adhesions, anteriorly, of the two hemispheres, and I asked the old doctor if such a condition could arise

in *articulo mortis*. He made no reply, but was intently watching my dissection. With a large amputating-knife I sliced the upper surface off the left hemisphere, about an inch and a half below the highest convexity, and exposed an abscess at least one and one-half inches in diameter. The pus was odorless, tolerably consistent, and in it we found a blood-clot about the size of a pepper grain and shaped precisely like a bird's heart; in color, consistence, and surface, it was perfectly preserved. The old doctor now manifested a true and noble manhood, and told us the first manifestation of this malady which resulted in the death of its victim. Some seven months before, at a missionary sewing circle, in this room, she was crossing the floor and suddenly fell. The ladies were so much alarmed that a messenger was immediately sent for the doctor. When he came, he found the patient so well that he attributed it to a fainting-spell, and never had thought of the incident again until he saw the apoplectic clot. For some weeks she did not complain, excepting of dyspepsia, for which the doctor prescribed analeptics. Then a fixed pain was felt on the left side of the head, above the ear, which was called neuralgia. From this time forth the symptoms became more grave, and the intellectual disturbance was traced back to hereditary predisposition.

My diagnosis was mainly based on tonic contraction of the muscles in right arm, forearm and hand; the tendons at the wrist were tense as fiddle-strings, and appeared to have stretched the annular ligament

considerably. From this case we may learn how capillaries might be clogged enough to induce effusion sufficient to cause paralysis, and the patient ultimately recover. This clot had lain in the left cerebral hemisphere for weeks before a symptom of brain disease was manifested.

The profession of medicine makes constant demands on the faith of its votaries, and requires its practitioner, if he would honor his profession and do good to his patients, to be ever jealously watchful and careful to have his faith—*i.e.*, his opinion or diagnosis—founded on reason.

Dr. Murchison at the close of the last lecture on Functional Diseases of the Liver (Croonian Lectures, delivered at the Royal College of Physicians, London), says, "The day, I believe, will come when, with a more perfect knowledge than we now possess of the healthy functions and of the signs of functional derangement of the liver, we shall be enabled to prevent, or to arrest at their commencement, many of the most serious ailments to which mankind are liable, and thereby add another chapter to the volume of *preventive medicine*."

Epidemic diphtheritis is neither infectious nor contagious, but the result of some epidemic agent which impairs that function in the portal system, metamorphosing fibrin. Brown-Séquard says, "No less than 2690 grammes, or about  $86\frac{1}{2}$  ounces, of fibrin are daily lost to the blood in its passage through the digestive organs and the liver." Dr. Murchison says,

“If this be so, we can readily understand that, when anything occurs to interfere with this fibrin-destroying function, there should be a rapid increase of fibrin in the blood, as we know to occur in acute rheumatism and in other diseased states.”

The position assumed by the writer of this monograph is clear, and can be briefly stated. Diphtheritis consists in *excess of fibrin in the blood*. This hypothesis will explain all the phenomena of this disease so clearly and succinctly stated by Niemeyer under “symptoms and cause,” as well as those adverted to under “treatment” and “anatomical appearances.” It does not only explain them, but affords a rational conception of the *modus operandi* of the cause in inducing the pathological phenomena in a living organism. But the irresistible and conclusive proof of the truth of the doctrine is to be found in the effect and tolerance of the remedy. I was called to see a boy, aged seven years, last night at eight o’clock. His skin was hot, pulse small, very tense, quick and frequent. His throat was intensely red, with patches of exudation, and almost constant cough, with hoarseness. He had been sick thirty-six hours, and he was so dull and indisposed to exert himself that I had some difficulty in inspecting the fauces. Twelve grains of calomel were given during my stay, and eight grains ordered every hour until better. When I saw him this morning, at ten o’clock, he had taken eighty-two grains of calomel, and his eye was bright and manner cheerful. I assert, without fear

of contradiction, in no other disease I ever met with could this quantity be given to a seven-year-old boy without prostration, and, most certainly, in none other with an improvement in all vital functions and manifestations. Several members of the profession have tried the treatment, and done me the honor to invite me to see their patients. I have found all giving the remedy in too small doses and with too great intervals. This is not fair, and irresistibly reminds me of a singular incident in my own experience twenty or more years ago. As it is not only interesting but very instructive, I am certain to be excused for relating it here.

I was called to attend a respectable mulatto woman, æt. 26, married five years, never had conceived, good physique, etc. I diagnosed acute peritonitis from cold at time of menstruation. I bled, cupped, purged, etc.; about the time I expected recuperation—my remedies had relieved pain and fever—she relapsed. My antiphlogistic treatment, on second course, had to be vastly modified, but I soon succeeded in relieving pain and fever, and was again disappointed. No recuperation nor convalescence followed, but tympany, frequent pulse, wet skin, etc., compelled me to resort to quiniæ, carb. ammoniæ, wine, broths, etc. I told the family the case was very grave, and the probable result fatal, and insisted on a consultation. Dr. Addison, at that time the leading man in our profession, was chosen.

I took him to see my patient; he examined her carefully, and after hearing the treatment said, "I cannot suggest anything, and would only say, if she were the only woman left in Pittsburgh, she must die before many hours."

I told him "I was glad I could not concur with him; I was certain she would die if some surer and more reliable remedy were not substituted for those on whose use she had been growing worse," but referred him to an article in a London *Lancet* I had gotten the day before, on scrofulous peritonitis cured with half-scruple doses of potass. iodidi, given thrice daily. At that time iodine was timidly administered, and my worthy old doctor felt certain ten grains would be a fatal dose, but would consent to give five. I reasoned with him about the unfairness of adopting the diagnosis and treatment of a medical man of respectability and high character in a case, and diminishing, by one-half, the quantity of his remedial agent; but to no purpose. I had to be content to follow his method. On leaving, I told the mother to quit the emulsion (containing quiniæ, morphiæ, and carb. ammoniæ) and give a teaspoonful of the medicine prescribed, but not to omit wine and broth. Our consultation came off about noon, and on visiting the patient that night, I thought her condition improved; certainly, no worse. On the next morning the pulse was slower and fuller, tympany less, and respiration better; countenance vastly improved. The bowels had discharged gas during the

night. That night the amendment was most gratifying, and the next morning her recovery was no longer doubtful. I could not avoid giving utterance to my delight in speech, when the old mother suddenly interrupted me: "Doctor, will she have to take on of that blessed medicine?" "Certainly," I replied. "Well, you must give me a prescription; or will it do to send the bottle?" I told her it should have lasted five days with a teaspoonful three times a day. "Oh," she replied, "you know you told me to quit the other medicine and give a teaspoonful of this. She took a tablespoonful of the other every three hours, and I gave a teaspoonful of this every three hours." I looked at the vial and read the directions, "Three times a day." "Bless you, I can't read!" was her reply. For once I realized that ignorance was blissful and blessed; I think fifteen grains in twenty-four hours would not have saved our invalid, but forty did. That afternoon I called on Dr. A. (he was as blunt as he was learned) and asked him "when it would please him to see our patient again?" He said "he never visited dead people unless for *post-mortem*, and saw no advantage in an autopsy in such a case as our patient." When I told him she was better, out of danger, and convalescent, he doubted, but said "he would go up with me to see her at 9 A.M. the next day." I never saw such astonishment and pleased surprise on a human face as his countenance exhibited when he sat down at the bedside and examined this recovering invalid. When I told him

she had taken forty grains of the iodide in twenty-four hours instead of the fifteen prescribed, through the inability of the mother to read, he looked incredulous until I produced the labelled vial, which vindicated my story. I am now attending this woman's father, and she is nursing him, and is a vigorous and healthy person.

#### TREATMENT.

On this I have copied Niemeyer *verbatim et literatim*, and I venture to say that nothing could be more unsatisfying, nay, disheartening to a practical and philosophical physician who has to take charge of persons suffering from diphtheritis, than the rules and directions here laid down as his chart to steer by on this, previously depicted, most perilous sea. It is verily a labyrinth without an appreciable end; uncertainty, uncertainty, uncertainty fills his heart with dismay, look whither he may. It is a sad, miserable, and most melancholy groping in the dark, light dawning at last to reveal a convalescent or cadaver without a *modus operandi* or "rational" to crown either result with a rational or logical explanation; and, too often, an autopsy fails to reveal the *desideratum*.

Medical practice owes much, yea, nearly all of its principles to empiricism; but these facts are of real value only to a philosophical mind, which has logical acumen enough to decide between a *post hoc* and a *propter hoc*.

Our knowledge is composed not of facts, but of the relations which facts and ideas, or principles, bear to themselves or to each other; and real knowledge consists not in an acquaintance with facts, which only make a pedant, but in the use of facts, which makes a philosopher. Statistics, whose value in operative surgery, both curative and conservative, no man will deny, appear to have in practical medicine, which is, par excellence, the philosophical branch of our profession, an importance in our day which is purely fictitious and unreal. I contributed a short and very concise article on diphtheria to the *Medical Times*, of Philadelphia, last autumn, which came near being still-born, because I had not appended a long list of statistics such as append a Homœopathical Hospital report. Professor Wood, its worthy editor, wrote to me, "I have your paper on Diphtheria. It would make it much more valuable if you would state how many cases of diphtheria you have seen, and what proportion you have lost. In regard to a few cases, every one will say, PITTSBURGH CHILDREN ARE HARD TO KILL, AND THE DOCTOR HAS NOT SEEN MUCH." I replied, "if I had said I had seen forty, sixty, or one hundred cases in the epidemic of 1863 and since, I could not vouch for the correctness of my statement." Doctor McCann, who was my assistant for several years at that time, says "one hundred." I told him my article contained principles which were better than false facts, and a rationale which would tackle philosophic minds, or something of this kind.

Men who speak so much of the value of facts may understand the meaning of fact, but they evidently do not understand the meaning of value. For the value of a thing is not a property residing in that thing, nor is it a component; but it is simply its relation to some other thing. We say that a five-shilling piece has a certain value, but the value does not reside in the coin. If it does, where is it? Our senses cannot grasp *VALUE*. We cannot see value, nor hear it, nor feel it, nor taste it, nor smell it. The value consists solely in the relation which the five-shilling piece bears to something else. Just so in regard to facts. Facts, as facts, have no sort of value, but are simply a mass of idle lumber. (Many are a mass of lies.) The value of a fact is not an element or constituent of that fact, but is its relation to the total stock of our knowledge, either present or prospective. Facts, therefore, have merely a potential and, as it were, subsequent value, and the only advantage of possessing them is the possibility of drawing conclusions from them; in other words, of rising to the idea, the principle, the law which governs them.

I don't know how much the legal profession is annoyed, confounded, and irritated by false facts, but I do know how difficult it is to get a precise and truthful reply to questions propounded to nearly all patients, and how many of our numerous medical periodicals have cases reported in which the facts are not only incompatible but contradictory. They

are the fictions of a prejudging intellect, weaving a tissue to fit a preconceived opinion. Such persons are sincere and honest, but have never learned "to dig for truth, to seek for it as hidden treasure." They have never realized how much care, toil, and intellectual acumen are needed to discover the real and separate them from apparent facts. "Veracity implies a correspondence between words and convictions; truthfulness, a correspondence between conviction and eternal relations."

Dr. Thos. D. Mütter once repeated to me the following advice, given to him, when a young man, by the illustrious Dr. Physick: "When you are called to the treatment of an obscure case of disease, strive with all your might and means to attain the most probable diagnosis; then let your prescription be as single and simple as possible, to meet the indication or indications. And then, whilst watching your case, strive to discover every objection that reason might suggest adverse to your diagnosis."

As to prophylactics, I can only say, the fatal case reported (No. III.) occurred in a family of eight children,—eldest, fifteen years; youngest, nine months. The mother was not more grieved at her loss than she was tormented with fearful apprehension for those remaining, and appealed to me for protection. I said to her, "If my notion of the disease is true, I can prescribe medicine which, if given early, will prevent a fatal termination." I prescribed a solution of chlorate of potash, with directions for doses

every three hours, suitable to the age of the invalid, and calomel powders adapted to each child. Some days after the death of their child I attended their house-maid (No. IV. in my report), and did not think of asking about the children ; but a few weeks since she brought a little fellow to my office, suffering from eczema, when I said, " Your children escaped diphtheria ? " " No, doctor, they all had it, and were affected like the little girl that died ; but the calomel and potash did so much good, that I told my husband he need not ask the doctor to come."

In my own and in the practice of other medical gentlemen I must have seen over one hundred diphtheritic patients, and have never seen paralysis nor any other sequel to the disease when treated with calomel. I claim that this is the first verification of that wonderful prophecy made by Dr. Murchison at the close of his last Croonian lecture. No medical practitioner who believes that diphtheria is caused by excess of fibrin in the blood, originating in an impaired function in the portal system, which calomel (boldly and freely given) will restore, need fear to promise a cure in every case submitted to his management where the disease has not already consummated its destructive power. And in such a case his prognosis not only vindicates his professional sagacity, but honors the knowledge and truth of his profession.

I have copied Niemeyer so closely and literally, because I have never seen a more just and fair statement of our knowledge and experience in diphtheritis,

and I wish to place my, claimed, truth side by side with this honest exposition of Niemeyer's experience of the treatment of this most fatal malady.

In the epidemic of diphtheria of 1863, it was my misfortune to have my first severe case in the person of my grandchild and namesake, a boy of two and a half years. The mischief fixed itself on the Schneiderian membrane of both nostrils, reaching into the pharynx. Inside of forty-eight hours, the common treatment then in vogue being followed, the entire surface became gangrenous. The glands in the neck became enormously swollen, and the poor boy died "none too soon." In watching this case, I became convinced that the disease is not a *poison* of the blood or in the blood, but an excess of *fibrin*, called, in old times, the inflammatory diathesis.

The glandular swellings are not diphtheria, but a sequence, the fibrin having not only transuded but mechanically closed the capillaries; gangrene or else a slough ensues; and these glands are poisoned, as other glands are, from a virus conveyed to them by the lymphatics in the structure; as fatally killed and lifeless as a crushed hand or foot over which the wheels of a railroad-train have passed.

I have never yet seen glandular enlargement usher in an attack of diphtheria. On the contrary, the transudation has changed from a clear white to a dirty gray, a portion has been thrown off with the epithelium, and some underlying tissue has putrefied, before adenitis manifested itself.

To all who will try this plan I would only say, give calomel freely and boldly every hour until the intestinal discharges resemble the fresh-water polyps in water-troughs, gelatinous, and of a bright dark-green hue; then your patient is safe; and if you fear salivation, administer a dose of castor oil. I have never seen ptyalism in a single case, and seldom give any laxative. The calomel purges, but not excessively, even in children of three or four years who have taken a half-ounce. Should prostration follow these heavy doses, you can rely on the fact that you have been mistaken in your diagnosis, and pronounced a case of follicular tonsillitis, diphtheria, and can quit your remedy without any serious results.

I insist on giving calomel on ice-water in summer, and cold water in winter. Fill a teaspoon half full of water, and drop the powder on it; get the patient to open the mouth, and tumble it in; then wash down with fresh water.

Calomel should be given in its purity.

The hypothesis which I had adopted for years was as follows. The functions of the abdominal organs in inflammatory diseases were suspended for want of an influx of the *vis vitæ*, which was largely eliminated by the breaking down of tissue, which is rapidly destroyed in disease. The resulting compounds which should be thrown off by the liver, kidneys, and intestinal mucous surface were retained in circulation, and *then* became poisonous blood-elements, fearfully increasing the danger of the sufferer. I

supposed each particle of calomel to exercise the power of the point of a needle on the electric fluid, and attracting vital force to restore functional activity.

This may be called a mysterious hypothesis. To the student of natural science profound mystery attends every step of his progress. Catalysis is certain, but very mysterious. Optics demonstrates that we never see anything, but discern an image on the retina of our eyes. No study is so awfully mysterious and strangely perplexing as the minute anatomy of the ear. What was it that sat in the cochlea and semicircular canals in Mozart's and Beethoven's ears, and interpreted the impressions made on the aqua Cotunnii on the gossamer threads of the auditory nerves, woven into a film and suspended there? Science leads to mystery deep, unfathomable, and awful.

I knew an old veterinary surgeon for many years, and have seen him cure relaxed and distended capillaries in the conjunctivæ of horses' eyes, remaining after the reduction of acute conjunctivitis, in a few hours, by blowing calomel under the lid from the cylinder of a goose-quill.

Calomel should be given in large doses, and repeated every hour until the bile in the dejections assumes the appearance described. Then you are done with it, and run no risk of ptyalism. When given at long intervals you do not secure free and frequent evacuations, and it may have had the specific effect you desire long before you can discern it. A

liver relieved and acting healthfully and vigorously, portal veins readily emptying their contents into this organ, may be attended by lively action of the lacteals, which would convey calomel into the blood.

I permit my patients to take cold water and lemonade *ad libitum*, and insist on their drinking frequently mucilaginous fluids. I prefer barley gruel, but give gum-arabic water, flaxseed tea, and slippery-elm water, and nothing else,—*no food whatever*. During convalescence in the feeble I give small doses of quinia. With the calomel I give every third hour chlorate of potash. It has never done injury, but I doubt if it is needful.

The metamorphoses which are brought about by and in the liver, as shown by that excellent compilation of experiments and their results, published by Dr. Murchison, make it very easy to understand how a liver, to-day ceasing to destroy fibrin, may in a few days hence permit the blood to be surcharged with lithic acid, as happened in Case IV.

I have notes of many cases recorded, but have only transcribed as many as I thought needed to explain my hypothesis.

*Case I.*—September 23, 1863, 11 A.M., was called in consultation with Dr. Robinson to see the daughter of Mr. Beatty, aged three years, who became ill the day before. She was a beautiful child, fair hair and blue eyes, with good organization. Countenance was distressed; almost perfect aphonia; respiration slightly

stridulous; pulse small, hard, quick, and frequent; the whole fauces of a bright red, and covered with slight patches of exudation. The doctor had given a very unfavorable prognosis (had only seen her a few hours previous to my visit), in which I concurred, as the mischief had fixed itself mainly in the larynx. His treatment was five grains of potass. chlorat. in solution every third hour, and pencilling throat with solution of nitrat. argenti in glycerin. I prevailed on the doctor to continue his treatment, and give ten grains of calomel in a little ice-water, and repeat five grains every hour until we should meet again the next morning. Diet: cold water, lemonade, and barley gruel.

September 24, 10 A.M.—Met the doctor, and found our patient very much improved; voice almost restored: had two dejections; continued treatment.

September 25, 10 A.M.—Patient cheerful and bright; voice restored; pulse soft and natural; no prostration; respiration normal. Continue calomel every third hour until stools appear like polyps in water-troughs. Add syrup senegæ to potass. chlorat. solution to relieve cough.

September 26, 10 A.M.—Patient took castor oil at night, when stools manifested characteristic mercurial action. Had taken four drachms calomel, and no prostration. Is now a vigorous young lady.

*Case II.*—July 24, 1865, 11 A.M., was hurriedly called to see a child of John Eicher. I could not go, —was an invalid, and had been already overworked,

—but got Dr. James McCann to visit it, and promised to see it myself in the afternoon. Dr. McCann reported that the father, who went out with him, said they had buried an elder child one week before from diphtheria, and that the babe (eight months old) was now suffering from the same disease, and the attending physician pronounced the case hopeless. The child was well formed and nourished; pulse small, tense, and so frequent I could not count it; respirations frequent, difficult, attended by croupal noise; and at intervals there was a short, hoarse, expulsive, breaking cough. The skin was damp, face pallid and rather bluish in hue; the countenance had a worn, exhausted expression, and the eyes dull. The fauces had a glossy-red appearance, and the left tonsil had a diphtheritic film. Ordered three grains calomel every hour; potass. chlorat.,  $\mathfrak{z}\text{i}$ ; aquæ destillat.,  $\mathfrak{z}\text{iii}$ . M. A teaspoonful every three hours, and throat to be pencilled with nitrat. argenti,  $\mathfrak{D}\text{i}$ ; glycerin,  $\mathfrak{z}\text{i}$ ; barley gruel or gum-water and ice-water *ad libitum*. When I proposed to Dr. McCann, in the afternoon, to visit this child, he protested; told me I had better spare my strength and visit hopeful cases. I told him I had promised, and would go. Found the case as hopeless as the doctor had depicted it, and had no expectation it could recover. Doubled the calomel powders and gave six grains every hour. Continued other treatment. I found the spoon daubed with calomel; ordered another, and showed them how to give the powder. And this is important. A spoon

half full of water, powder dropped on the water, and then *tumbled* into the open mouth. Then give a drink of water to wash it down. In this way it escapes the lips and teeth, and the whole dose is swallowed. It does not touch the spoon, and therefore cannot adhere to it.

July 25, 8 A.M.—Patient much improved; eyes bright; countenance calm, except when it coughs; then expresses pain. Cough still croupal; respiration slower, fuller, and freer, and some mucus in trachea when it coughs; pulse 130, fuller and softer; bowels have moved twice; dejections exceedingly offensive and black; throat not so red, and exudation passing away from left tonsil.

5 P.M.—Patient doing well. Two dejections since morning; dark green and oily; not offensive; think fetor in first was owing to putrefied caseine. Give three grains instead of six grains of calomel every hour. Up to this time this infant of eight months had taken one hundred and sixty grains of calomel.

July 26, 9 A.M.—Improvement very marked. Child inclined to be playful. Slept well all night; had to be waked to administer medicine. Respiration almost normal; pulse 110; skin natural; cough still troublesome. Bowels moved three times; dejections watery and very green. Fauces very much better. Give calomel every fourth hour, and potass. chlorat. in interval. Give beef broth, without fat.

July 27, 9 A.M.—Improvement manifest. Respiration perfectly free, but cough somewhat annoying,

yet not frequent. Bowels moved three times,—a dark clear green, consisting of gelatinous masses. Omit calomel, and give ol. ricini, ʒij. Continue potass. chlorat. every four hours, and give gtt. xv, in interval, of syrup. polygalæ senegæ.

July 28.—Cough better; patient doing well. Continue treatment.

July 29 and 30.—Convalescence progressing happily.

This child was brought to the office about the third week of October, and an abscess was opened at the angle of the left jaw, which discharged laudable pus and soon healed. Dr. McCann reported this case at the time, and I have considerably cut his report, but cannot avoid quoting his remarks on it in full:

“In this case, a babe eight months old, which appeared moribund on first and second visits, took at the rate of  $3\frac{27}{8}$  grains of calomel every hour for sixty-eight hours, and instead of exhaustion, the load was rolled off the vital organism, and it steadily attained its power and force of healthy vitality. In this case, as indeed in all the other cases we have noted, there was never a sign of mercurialism, no ptyalism, no ulceration of the mouth or throat, and, judging by the *physique* of the child when last seen, no injury had resulted to its organism from mercury or disease. Thus the bugbear of the injurious effects of mercury on the system may be laughed at as utterly ridiculous.”

*Case III.*—Thursday, September 13, 1877, 9 A.M.  
—Saw a female child of J. Yarnells, aged five years,

—a family in which I have been the sole physician for twelve years. Found the child feeble, with hot skin, frequent but feeble pulse, complaining of great soreness in throat; no glandular enlargement. On inspecting fauces, saw the tonsils thickly covered with a white exudation, which extended over palate, velum palati, and pharynx. The tonsils had the appearance of two small hard-boiled eggs with shell removed. On inquiry, learned the patient had been ill since Monday. Gave a fatal prognosis, and prescribed tonics, stimulants, etc., to support against gangrene of fauces, which I felt certain would occur. On visiting her in the evening, found parents much rejoiced at apparent improvement. Some portions of exudation had come away, one-fifth inch in thickness. Dr. McCann was with me, and I had intended to experiment with bichloride of mercury; but the doctor wisely admonished me not to change treatment in a case which, to an enlightened medical observer, must inevitably prove fatal, when the parents believed the patient improving on the remedies administered.

On the following morning, September 14, the patient was moribund, glands of neck immensely swollen, breath had a gangrenous fœtor, extremities cold, pulse could not be counted, and she died at noon.

*Case IV.*—At ten o'clock on Tuesday, October 2, 1877, was called to see the house-maid in same family, aged seventeen years, and of a vigorous organization; had but lately come from England. Had felt unwell for several days, but had worked until the afternoon,

when she told the lady she could not work any more, but must go to bed. Found her with flushed face, hot skin, anxious countenance; complains of soreness in throat and severe pain in head, especially in occiput, extending down spine. Has aphonia; can only speak in whisper; pulse small, tense, quick, and 136 in minute. Tongue furred; throat of an intense glossy red, and a thin patch of diphtheritic exudation on right tonsil; pain from this tonsil extends into right ear.

Bled her to syncope (twenty-four ounces), gave twenty-five grains of calomel, and in an hour twenty more, then ten grains every hour; if she complains of weakness, extend to three hours. Give ten grains of potass. chlorat. in solution every third hour, and nothing to be taken but lemon-water, cold water, and barley gruel.

October 3, 10 A.M.—Pulse 100, fuller, and softer; slept so comfortably since 4 A.M. that powders were given only every third hour. Bowels moved but once, although two drachms of calomel have been taken, and there is no prostration. Feels much better; very slight pain in head, voice improved, and film leaving right tonsil, but face is still too red. Continue treatment; if bowels are not moved at noon, give a teaspoonful of magnes. sulphat. in a cup of cold water. Eight P.M., condition comfortable; pulse 90; face paler; bowels moved once since she took the salts. Continue treatment.

Thursday, October 4, 10 A.M.—Had a good night;

pulse small, quick, and frequent,—a mercurial pulse I call it. Bowels had moved thrice, but the discharge, in color and consistence, did not warrant the omission of calomel. Continue treatment; touch right tonsil with solution of nit. argenti in glycerin, ʒj to ʒss. The exudation has passed off, and epithelium with it. Ordered the stools to be carefully observed, and if the bile floats in dark, bright-green gelatinous masses, abandon calomel and give ol. ricini, ʒiss.

Was sent for to visit patient at 9 P.M. Messenger said that patient had been unable to swallow anything since 5 P.M. When I saw patient, found her and friends much alarmed, but she had comfortable skin, pulse, etc. Suspected the diphtheritic inflammation had reached upper portion of œsophagus and loss of epithelium had induced spasmodic constriction of circular fibres,—the same condition I had once combated in an old lady who had swallowed her tea too hot. Called for a cup of warm gruel, and urged the patient to fill her mouth and make a strenuous effort to swallow it. She succeeded so well that the contents of the cup were soon transferred to her stomach. This difficulty of deglutition passed away in two days. Finding in dejections characteristic bile, omitted calomel and ordered ol. ricini, ʒiss. Continue potass. chlorat. and touch tonsil, then pass brush into œsophagus.

October 5, 10 A.M.—Patient comfortable; all symptoms favorable; only complains of something in throat annoying her like a foreign body, but not painful.

On inspection, saw that the uvula was about the size and shape of a marble and had the appearance of a vesicle of water. Ordered it to be brushed frequently with a large camel's-hair pencil moistened with red-pepper tea. May take beef broth.

Saturday, 6th, 9 A.M.—Patient quite well; palate nearly normal in appearance and size. Ordered one and a quarter grains, thrice daily, chlorat. potass. to be continued.

Sunday, 11 A.M.—Patient had some pain in wrist and shoulder of right side during night. Room has no fireplace, and nights are cool and weather damp. Prescribed blue mass, Æss, and comp. ext. colocynth., Æss, to be mixed and divided into four pills, to be taken at once. A half-ounce spts. Mindereri, ten drops of wine of root of colchicum (British), and four drops of tinct. rad. aconiti, to be taken every three hours, and painful parts to be painted with Churchill's tinct. iodine.

Monday, October 8.—Patient to resume quinine. Rheumatism all gone; take Mindereri mixture thrice daily. In a week from this she went to her parents' home (thirty miles by railroad), and has been well ever since.

While these sheets were passing through the press (September, 1878), I received from Dr. James McCann, of this city, the accompanying history of another *typical* case of this dread disease, which, in its treatment and results, fully confirms the views upon which my practice and teachings are based.

D. J. S., æt. three years, a very vigorous and hitherto healthy child, residing in a deep valley, a few miles from the city of Pittsburgh, and in the vicinity of numerous slaughter-houses (about a mile north of, and at an elevation of over two hundred feet above them) and other generators of filth, was attacked with diphtheria on July 14, 1878, but the nature of the malady was not suspected, and he received no medical attention until noon of the following day, when he was brought to my office in the city by his father.

At that time he was exceedingly ill, his pulse was very rapid and irritable, his skin hot, his respirations somewhat labored, and his voice so husky as to only allow him to speak in a whisper. His tonsils were covered by a thick yellowish-white exudation, and the whole fauces, as well as the veil of the palate, intensely red and shining in appearance; while the glands at the angle of the jaw were somewhat inflamed and tender. An emetico-cathartic, composed of ipecac and calomel, was ordered for him at once, its action to be followed by calomel, gr. iv, every hour, until free alvine evacuations were obtained. Chlorat. potassæ, gr. iv, in solution, was also to be administered at intervals of two hours.

When seen again,—at 8 P.M.,—his condition had not undergone any very material change, except that the exudation had extended its area somewhat, and the respiration had grown more difficult and more decidedly croupal. The emetic had not acted, and there had not been any discharge from the bowels.

During the night all the symptoms became aggravated, and so alarmed his parents that a consultation was asked at an early hour the following morning, and Dr. Reiter saw the case with me at 9 A.M. (July 16).

The child's condition at that hour was decidedly worse,—the respirations labored and croupal, the intercostal spaces forcibly drawn in at each inspiration, the voice almost completely suppressed, and the whole fauces thickly covered with a dense exudation. The surface of the body was hot, and the pulse still frequent and wiry. Although, by this time, he had taken nearly sixty grains of calomel, there had been no motion from the bowels.

It was determined to increase the dose of the mercurial to gr. viij every hour, to continue the solution of chlorat. potassæ, and the question of tracheotomy was discussed in case his croupal symptoms became more aggravated.

When next seen,—at 8 P.M.,—there was evidently some improvement in his condition. The efforts at respiration were less tumultuous, the laryngeal symptoms were less marked, and the exudation had not spread. His pulse was still full and strong, but it had lost its extreme irritability, the tempera-

ture was lower (it was not carefully noted at any time during his illness, unfortunately), and his bowels had acted once, slightly, during the day. The treatment was continued during the night.

On the following morning the improvement still continued. The breathing, though still noisy and croupal, was less labored; the intercostal spaces were no longer forcibly drawn in by each effort at respiration; the exudation had not extended, but, on the contrary, seemed disposed to separate at the edges; the pulse was calmer, the heat less, and the condition of the child vastly more promising.

The mercurial was still continued, but the interval between the doses increased to three hours.

From this time the improvement was steady, though gradual, but the membrane did not entirely separate from the throat until fully a week later, while the aphonia had not disappeared at the expiration of a month; the child being then only able to talk in a hoarse whisper, and a cough which still continued had a decidedly croupal sound. The extent and depth of the exudation could only be estimated by the eschars which it formed, or by which it separated; it certainly extended not only through the mucous membrane of the fauces, but deeply into the stroma of the tonsils.

The recovery of this child was very complete, except as just stated, and was reasonably rapid. There was none of the exhaustion so commonly encountered after an attack of such severity.









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